

## Practice Test 2

Solve the following:

$$\begin{aligned} \textcircled{1} \quad x + 18 &= -20 \\ x + \cancel{18} - \cancel{18} &= -20 - 18 \\ x &= -38 \end{aligned}$$

$$\begin{aligned} \text{Check: } x + 18 &= -20 \\ -38 + 18 &= -20 \checkmark \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad x - 7 &= -3 \\ x - \cancel{7} + \cancel{7} &= -3 + 7 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} \text{Check: } x - 7 &= -3 \\ 4 - 7 &= -3 \checkmark \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad x - 3 - 8 &= -12 + 2 \\ x - 11 &= -10 \\ x - \cancel{11} + \cancel{11} &= -10 + 11 \\ x &= 1 \end{aligned}$$

$$\begin{aligned} \text{Check: } x - 3 - 8 &\stackrel{?}{=} -12 + 2 \\ 1 - 3 - 8 &\stackrel{?}{=} -10 \\ -2 - 8 &= -10 \checkmark \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad 9x - 8x - 3 &= -14 \\ x - 3 &= -14 \\ x - \cancel{3} + \cancel{3} &= -14 + 3 \\ x &= -11 \end{aligned}$$

$$\begin{aligned} \text{Check: } 9x - 8x - 3 &= -14 \\ 9(-11) - 8(-11) - 3 &\stackrel{?}{=} -14 \\ -99 + 88 - 3 &\stackrel{?}{=} -14 \\ -11 - 3 &\stackrel{?}{=} -14 \checkmark \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad -77 - 11 &= -11x \\ +88 &= -11x \\ +11 &= -11 \\ 8 &= x \end{aligned}$$

$$\begin{aligned} \text{Check: } -77 - 11 &= -11(8) \\ -88 &= -88 \checkmark \end{aligned}$$

$$\begin{array}{rcl} \textcircled{6} & -24 = 2x - 4x & \\ & +24 & = +2x \\ \hline & 12 & = x \end{array}$$

Check:  $-24 = 2x - 4x$   
 $-24 = 2(12) - 4(12)$   
 $-24 = 24 - 48$   
 $-24 = -24 \checkmark$

$$\begin{array}{rcl} \textcircled{7} & -7(2x) = -14 & \\ & -14x = -14 & \\ \hline & -14 & -14 \\ & x = 1 & \end{array}$$

Check:  $-7(2x) = -14$   
 $-7(2 \cdot 1) = -14 \checkmark$

$$\begin{array}{rcl} \textcircled{8} & 6x - 13x = -49 & \\ & -7x = -49 & \\ \hline & -7 & -7 \\ & x = 7 & \end{array}$$

Check:  $6x - 13x = -49$   
 $6(7) - 13(7) = -49$   
 $42 - 91 = -49$   
 $-49 = -49 \checkmark$

$$\begin{array}{r} 8 \ 10 \\ 91 \\ \hline 42 \\ 49 \end{array}$$

$$\begin{array}{rcl} \textcircled{9} & -7x - 3 = 25 & \\ & -7x - 3 + 3 = 25 + 3 & \\ & -7x = 28 & \\ \hline & -7 & -7 \\ & x = -4 & \end{array}$$

Check:  $-7x - 3 = 25$   
 $-7(-4) - 3 = 25$   
 $28 - 3 = 25 \checkmark$

$$\begin{array}{rcl} \textcircled{10} & 6x + 16 = 9x - 20 & \\ & 6x - 6x + 16 + 20 = 9x - 6x - 20 + 20 & \\ & 36 = 3x & \\ \hline & 3 & 3 \\ & 12 = x & \\ & 6x - 9x + 16 - 16 = 9x - 9x - 20 - 16 & \\ & -3x = -36 & \\ \hline & -3 & -3 \\ & x = 12 & \end{array}$$

Check:  $6x + 16 = 9x - 20$   
 $6(12) + 16 = 9(12) - 20$   
 $72 + 16 = 108 - 20$   
 $88 = 88 \checkmark$

$$\begin{aligned}
 (11) \quad 5x - 6 &= -26 \\
 5x - \cancel{6} + \cancel{6} &= -26 + 6 \\
 \frac{5x}{5} &= \frac{-20}{5} \\
 x &= -4
 \end{aligned}$$

$$\begin{aligned}
 \text{check: } 5x - 6 &= -26 \\
 5(-4) - 6 &= -26 \\
 -20 - 6 &= -26 \checkmark
 \end{aligned}$$

(12) Express the following numbers as product of prime factors.

$$\begin{aligned}
 (a) \quad 48 &= 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 = 2^4 \cdot 3 \\
 &\begin{array}{c} 48 \\ \swarrow \searrow \\ 6 \quad 8 \\ \swarrow \searrow \swarrow \searrow \\ (2) \quad 3 \quad (2) \quad 4 \\ \quad \quad \quad \swarrow \searrow \\ \quad \quad \quad (2) \quad (2) \end{array}
 \end{aligned}$$

$$\begin{aligned}
 (b) \quad 72 &= \underline{2} \cdot \underline{2} \cdot \underline{2} \cdot \underline{3} \cdot \underline{3} = 2^3 \cdot 3^2 \\
 &\begin{array}{c} 72 \\ \swarrow \searrow \\ 8 \quad 9 \\ \swarrow \searrow \swarrow \searrow \\ 2 \quad 4 \quad 3 \quad 3 \\ \quad \swarrow \searrow \\ \quad 2 \quad 2 \end{array}
 \end{aligned}$$

$$\begin{aligned}
 (c) \quad 170 &= 2 \cdot 5 \cdot 17 \\
 &\begin{array}{c} 170 \\ \swarrow \searrow \\ 17 \quad 10 \\ \quad \swarrow \searrow \\ \quad 2 \quad 5 \end{array}
 \end{aligned}$$

(13) Change the following mixed numbers to improper fractions

$$(a) \quad 3\frac{4}{7} = \frac{3 \cdot 7 + 4}{7} = \frac{21 + 4}{7} = \boxed{\frac{25}{7}} \quad 3\frac{4}{7} \checkmark$$

$$(b) \quad 7\frac{1}{9} = \frac{7 \cdot 9 + 1}{9} = \frac{63 + 1}{9} = \boxed{\frac{64}{9}} \quad 7\frac{1}{9} \checkmark$$

$$(c) \quad -11\frac{1}{2} = -\frac{22 + 1}{2} = \boxed{-\frac{23}{2}} \quad -11\frac{1}{2} \checkmark$$

(14) Write the following improper fractions as mixed numbers or a whole number.

$$(a) \quad \frac{17}{8} = 2\frac{1}{8} \quad \text{Check } 2\frac{1}{8} = \frac{2 \cdot 8 + 1}{8} = \frac{16 + 1}{8} \checkmark$$

$$(b) \quad \frac{23}{7} = 3\frac{2}{7} \quad \text{Check } 3\frac{2}{7} = \frac{3 \cdot 7 + 2}{7} = \frac{21 + 2}{7} \checkmark$$

$$(c) \quad -\frac{11}{3} = -3\frac{2}{3} \quad \text{Check } -3\frac{2}{3} = -\frac{3 \cdot 3 + 2}{3} = -\frac{9 + 2}{3} \checkmark$$

(15) Write each ratio as a fraction in simplest form

$$(a) \quad 12 \text{ points to } 42 \text{ points} \quad \frac{12}{42} = \frac{2 \cdot \cancel{6}}{7 \cdot \cancel{6}} = \boxed{\frac{2}{7}} \quad \text{Check } \frac{2 \cdot 6}{7 \cdot 6} = \frac{12}{42} \checkmark$$

$$(b) \quad 6 : 10 \quad \frac{6}{10} = \frac{\cancel{2} \cdot 3}{\cancel{2} \cdot 5} = \frac{3}{5} \quad \text{Check: } \frac{3 \cdot 2}{5 \cdot 2} = \frac{6}{10} \checkmark$$

(16) Find the value of x of each proportion,

$$(a) \quad \frac{x}{12} = \frac{15}{36} \cdot 12$$

$$x = \frac{15 \cdot 12}{36}$$

$$x = \frac{15 \cdot \cancel{12}}{3 \cdot \cancel{12}} = 5 \quad (x = 5)$$

$$\frac{x}{12} = \frac{15}{36}$$

$$\text{Check } \frac{5}{12} \stackrel{?}{=} \frac{15}{\cancel{36}^5} \checkmark$$

$$\textcircled{6} \quad \frac{9}{15} = \frac{3}{x}$$

$$15x \cdot \frac{9}{15} = 15x \cdot \frac{3}{x} \quad \text{LCD } 15x$$

$$\frac{9x}{9} = \frac{15 \cdot 3}{9}$$

$$\boxed{x = 15/3} \Rightarrow \boxed{x = 5}$$

$$\frac{9}{15} = \frac{3}{x}$$

$$\frac{9 \cdot x}{9} = \frac{3 \cdot 15}{9}$$

$$x = \frac{3 \cdot 15}{3 \cdot 3}$$

$$\boxed{x = 5}$$

$$15x \cdot \frac{9}{15} = \frac{3}{x} \cdot 15x$$

$$\frac{9x}{9} = \frac{3 \cdot 15}{9}$$

$$x = \frac{3 \cdot 15}{3 \cdot 3}$$

$$\boxed{x = 5}$$

$$\text{Check: } \frac{9}{15} \stackrel{?}{=} \frac{3 \cdot 3}{5 \cdot 3} \checkmark$$

$$\textcircled{1} \quad \frac{24}{39} = \frac{x}{13}$$

$$\frac{24 \cdot 13}{39} = \frac{39x}{39}$$

$$\frac{3 \cdot 8 \cdot 13}{3 \cdot 13} = x$$

$$\boxed{8 = x}$$

Check:

$$\frac{24}{39} \stackrel{?}{=} \frac{8}{13} \cdot \frac{3}{3} = \frac{24}{39} \checkmark$$

$\textcircled{17}$  What is the volume of a rectangular solid that is 4 feet wide, 7 feet long & 3 feet high?

$$V = 4 \cdot 7 \cdot 3$$

$$V = 28 \cdot 3$$

$$V = 84 \text{ ft}^3$$

Answer: The volume of a rectangular solid with these dimensions is 84 ft<sup>3</sup>

- 18) Find the area of a rectangle with a height of 14 ft and a width of 3 ft.

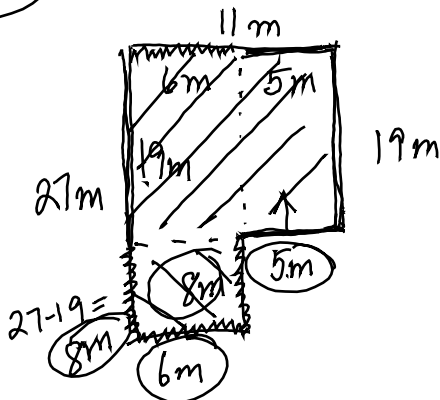
$$A = \text{base} \times \text{height}$$

$$A = 14 \times 3$$

$$A = 42 \text{ ft}^2$$

The area of a rectangle with those dimensions is 42 ft<sup>2</sup>

- 19) Find the area of the figure below:



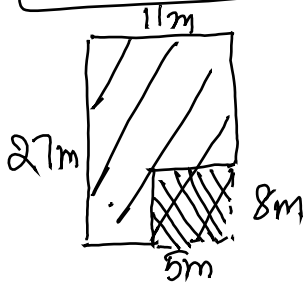
$$A_1 = 19 \times 11 = 209 \text{ m}^2$$

$$A_2 = 8 \times 6 = 48 \text{ m}^2$$

$$A = A_1 + A_2 = 209 + 48$$

$$A = 257 \text{ m}^2$$

The area is 257 m<sup>2</sup>



$$A_1 = 27 \times 11 = 297 \text{ m}$$

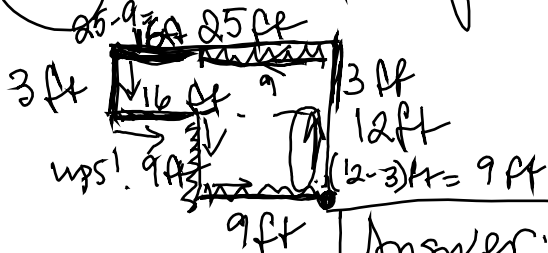
$$A_2 = 8 \times 5 = 40 \text{ m}$$

$$A = A_1 - A_2 = 297 - 40$$

$$\begin{array}{r} 27 \\ 11 \\ \hline 27 \\ 27 \\ \hline 297 \end{array}$$

$$= 257 \text{ m}^2$$

- 20) Find the perimeter of the figure below



$$P = 12 + 25 + 3 + 16 + 9 + 9 =$$

$$15 + 25 + 16 + 18 = 40 + 34 = 74$$

Answer: The perimeter of the figure is 74 ft.

Good Luck  
to everyone!